

Attorney Docket No. **IMMR004/01US**

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of Lonny L. CHU

Examiner: Unassigned

Serial No.: Unassigned

Confirmation No.: Unassigned

Filed: Herewith

For: SOUND DATA OUTPUT AND MANIPULATION USING HAPTIC FEEDBACK

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U.S. Patent and Trademark Office  
2011 South Clark Place  
Customer Window, Mail Stop Patent Application  
Crystal Plaza Two, Lobby, Room 1B03  
Arlington, VA 22202

**INFORMATION DISCLOSURE STATEMENT TRANSMITTAL**

Enclosed is an Information Disclosure Statement and accompanying Form PTO/SB/08A for the above-identified patent application.

- [x] In accordance with 37 C.F.R. §1.97(b), no additional fee for submission of the IDS is required.
- [ ] In accordance with 37 C.F.R. §1.97(c), also enclosed is:
  - [ ] the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p); or
  - [ ] a statement as specified in 37 C.F.R. §1.97(e).
- [ ] In accordance with 37 C.F.R. §1.97(d), a statement as specified in 37 C.F.R. § 1.97(e) and the fee of \$180.00 as set forth in 37 C.F.R. §1.17(p) are also enclosed.
- [ ] Check No. \_\_ in the amount of \$\_\_ for the total fee is attached.
- [x] A return receipt postcard is also enclosed.
- [ ] Please charge \$\_\_ to Deposit Account No. 50-1283 for the total fee. This paper is being submitted in duplicate.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

Dated: February 20, 2004

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Respectfully submitted,  
**COOLEY GODWARD LLP**



Christopher R. Hutter  
Reg. No. 41,087

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of Lonny L. CHU

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**INFORMATION DISCLOSURE STATEMENT  
UNDER 37 C.F.R. §1.97(b)**

In accordance with the duty of disclosure set forth in 37 C.F.R. §1.56, Applicant(s) hereby submits the following information in conformance with 37 C.F.R. §§1.97 and 1.98.

- Pursuant to 37 C.F.R. §1.98, a copy of each document cited in the attached Form PTO/SB/08 is enclosed.
- No copies of the publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98(d) because the publications were previously cited by or submitted to the Office in prior Application Serial No. 09/975,320 to which the above-identified application claims priority under 35 U.S.C. §120.
- No copies of any U.S. patents or U.S. patent application publications listed on the attached Form PTO/SB/08A are being provided pursuant to 37 C.F.R. §1.98 because this application was filed after June 30, 2003.
- Publication(s) \_\_\_\_ listed on the attached Form PTO/SB/08A were cited in a foreign search or examination report corresponding to \_\_\_\_ application serial no. and mailed on \_\_\_\_.
- Enclosed is a copy of a non-English publication(s) \_\_\_. Pursuant to §609 of the M.P.E.P., Applicant submits the attached foreign search or examination report, which cites such non-English language publication(s).
- Enclosed is a copy of a non-English publication(s) \_\_\_. English language publication \_\_\_\_ (copy enclosed) claims priority from this non-English publication.

- Enclosed is an explanation of non-English publication(s) \_\_\_\_ for which an English translation is not available.
- Enclosed is an English translation of non-English publication(s) \_\_\_\_ cited in the attached Form PTO/SB/08A.
- Enclosed is a copy of pending patent Application Serial No. \_\_\_\_.

This Information Disclosure Statement is filed within any one of the following time periods:

- within three months from the filing date of this national application other than a CPA under 37 C.F.R. § 1.53(d);
- within three months from the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in this international application;
- before the mailing date of a first office action on the merits; or
- before the mailing of a first office action after the filing of a request for continued examination under 37 C.F.R. § 1.114.

It is respectfully requested that the Examiner consider the above-noted information and return an initialed copy of the attached Form PTO/SB/08A to the undersigned.

Dated: February 20, 2004

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Respectfully submitted,  
**COOLEY GODWARD LLP**

By:



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Christopher R. Hutter  
Reg. No. 41,087

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				Application Number	Unassigned
Sheet	1	of	4	Filing Date	February 20, 2004
				First Named Inventor	Lonny L. CHU
				Group Art Unit	Unassigned
				Examiner Name	Unassigned
				Attorney Docket Number	
				IMMR-004/01US	

## U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
	A1	6,300,936		Braun et al.	10/09/2001
	A2	6,292,170		Chang et al.	09/18/2001
	A3	6,285,351		Chang et al.	09/04/2001
	A4	6,252,583		Braun et al.	06/26/2001
	A5	6,219,034		Elbing et al.	04/17/2001
	A6	6,198,206		Saarmaa et al.	03/06/2001
	A7	6,161,126		Wies et al.	12/12/2000
	A8	6,131,097		Peurach et al.	10/10/2000
	A9	6,088,017		Tremblay et al.	07/11/2000
	A10	6,005,551		Osborne et al.	12/21/1999
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	A13	5,889,672		Schuler et al.	03/30/1999
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	A42	5,035,242		Franklin et al.	07/30/1991

<sup>1</sup> Unique citation designation number.<sup>2</sup> See attached Kinds of U.S. Patent Documents.

Examiner Signature		Date Considered	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute for form 1449A/PTO				<i>Complete if Known</i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				Application Number	Unassigned
				Filing Date	February 20, 2004
				First Named Inventor	Lonny L. CHU
				Group Art Unit	Unassigned
				Examiner Name	Unassigned
Sheet	2	of	4	Attorney Docket Number	IMMR-004/01US

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A64	3,157,853	Hirsch	11/17/1964

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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Office <sup>1</sup>	Number <sup>2</sup>	Kind Code <sup>3</sup> (if known)		
B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990	
B2		WO 95/02233		Cybernet Systems Corp.	01/19/1995	
B3		WO 02/27705			04/04/2002	

<sup>1</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).

<sup>2</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

<sup>3</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.

<sup>4</sup> Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature		Date Considered	
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Substitute for form 1449A/PTO				<i><b>Complete if Known</b></i>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				<b>Application Number</b>	Unassigned
				<b>Filing Date</b>	February 20, 2004
				<b>First Named Inventor</b>	Lonny L. Chu
				<b>Group Art Unit</b>	Unassigned
				<b>Examiner Name</b>	Unassigned
Sheet	3		4	<b>Attorney Docket Number</b>	IMMR-004/01US

<b>OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS</b>					
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			T <sup>2</sup>
	C1	Baigrie, "Electric Control Loading – A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990			
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993			
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90			
	C4	Brooks et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," <i>JPL Publication 85-11</i> , NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985			
	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990			
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," <i>1993 IEEE International Conference on Robotics and Automation</i> , pp. 25-44, 05/02/1993			
	C7	Snow et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989			
	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990			
	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90			
	C10	Caldwell et al., "Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993			
	C11	Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992			
	C12	Gotow et al., "Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337			
	C13	Stanley et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 55-61, ASME 1992			
	C14	Russo, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992			
	C15	Kontarinis et al., "Display of High-Frequency Tactile Information to Teleoperators," <i>Telemannipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993			
	C16	Patrick et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al, Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990			
	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90			
	C18	Bejczy, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," <i>Science</i> , Vol. 208, No. 4450, pp. 1327-1335, 1980			
	C19	Bejczy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISM-IFTOMM</i> , Sep. 8-12, 1981			
	C20	McAffee et al., "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," <i>JPL 1988</i> , JPL D-5172			
	C21	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation</i> , MIT, June 1995, archived 7/6/95			
	C22	Jacobsen et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," <i>Intervention/ROV '91 Conference &amp; Exposition</i> , Hollywood, Florida, May 21-23, 1991			
	C23	Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemansipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30- Oct. 1, 1992			
	C24	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990			
	C25	Terry et al., "Tactile Feedback In A Computer Mouse," <i>Proceedings of Fourteenth Annual Northeast Bioengineering Conference</i> , University of New Hampshire, March 10-11, 1988			
	C26	Howe, "A Force-Relating Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation</i> , Nice, France, May 1992			

Examiner Signature		Date Considered
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				Examiner Name	Unassigned
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C27	Eberhardt et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," <i>IEEE Virtual Reality Annual International Symposium</i> , Seattle, WA, Sep. 18-22, 1993	
C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	
C29	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop, JSC</i> , Houston, TX, July 25-27, 1989	
C31	Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics</i> , Vol. 41, No. 3, August 1995	
C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994	
C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987	
C34	Gillespie, B., "The Touchback Keyboard," Proc. of Int'l Computer Music Conf., October 1992, pp. 447-448	
C35	Gillespie, B., "The Virtual Piano Action: Design and Implementation," Proc. of Int'l Computer Music Conf. September 1994, pp. 167-170	
C36	Snibbe, S. et al., "Haptic Techniques for Media Control," Proc. of 14 <sup>th</sup> Annual Symp. On User Interface Software and Technology, UIST 2001, November 2001, pp. 1-10	
C37	MacLean K. et al., "An Architecture for Haptic Control of Media," Proc. of ASME Dynamic Systems and Control Division, Haptic Interfaces for Virtual Environments and Teleoperator Systems, 1999, pp. 1-10	
C38	O'Modhrain, M., "Playing by Feel: Incorporating Haptic Feedback into Computer-Based Musical Instruments," Dissertation, Dept. of Music, Stanford University, November 2000, pp. 1-107	

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<sup>1</sup> Unique citation designation number.

<sup>2</sup> Applicant is to place a check mark here if English language Translation attached.

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